

Title: Sampling Lake Alice Fish Populations

Location: Lake Alice National Wildlife Refuge, North Dakota

Resource Objective: To sample the fish populations in Lake Alice prior to the lake being opened for ice-fishing (which is scheduled to occur in the winter of 2015-2016).

Methodology: On July 2nd, 2014, 125'x 6' ¾"-2" mesh gill nets were set overnight in 8 pre-determined locations throughout the lake. GPS coordinates were recorded for all of the netting sites. The nets fished for 163.75 hours (8 net-nights). All captured fish were measured and weighed and otoliths were removed from a sample of walleyes (114) for age and growth analysis and mortality estimation.

Findings: Walleye were the most abundant gamefish sampled (123), followed by northern pike (75), yellow perch (2), and white bass (2). Sixteen white suckers were also sampled. Most of the walleye sampled were in the Q-P size group and most northern were also in the Q-P size group (Table 1). Walleye growth was below the North American average, but higher than at Devils Lake (Figure 1). Total annual mortality for walleye appears to be relatively low, but catch curve estimates for age 2-8 and ages 3-8 both had very low R² values and did not produce a significant negative slope (Figure 2). A correction term of one fish was added to the number of fish at each age in order to eliminate the catch of 0 age-7 fish. All sample sizes after age 8 had dropped below five, so age-8 was the last age utilized in the catch curves.

Table 1. Catch rates (fish per net-night), average length, and average Wr for gamefish captured during the 2014 Lake Alice netting survey.

Species	CPUE	CPUE S-Q	CPUE Q-P	CPUE P-M	CPUE M-T	Average Length	Average Wr
Northern Pike	9.38	0.38	8.25	0.75	0	614	83
Walleye	15.38	2.75	9.63	2.88	0	437	94
Yellow Perch	0.25	0.13	0	0	0.13	245	110
White Bass	0.25	0	0	0	0.25	420	122

Discussion: Overall, the fish populations on Lake Alice seem to be doing fine, although white bass and yellow perch numbers are low. Low perch and bass numbers are typical in Lake Irvine as well, which is contiguous with Lake Alice. The pike in Lake Alice are abundant as are the walleye. Walleye growth is not particularly fast, but it is faster than in Devils Lake. It also appears that walleye recruitment is adequate, but variable. The total mortality rate of the walleye seems to be relatively low, so ice fishing should not present a problem.

Recommendations: Sampling on Lake Alice should occur again before the lake is opened to ice fishing and for at least 2 years after ice fishing is allowed in order to track possible changes to the fishery.

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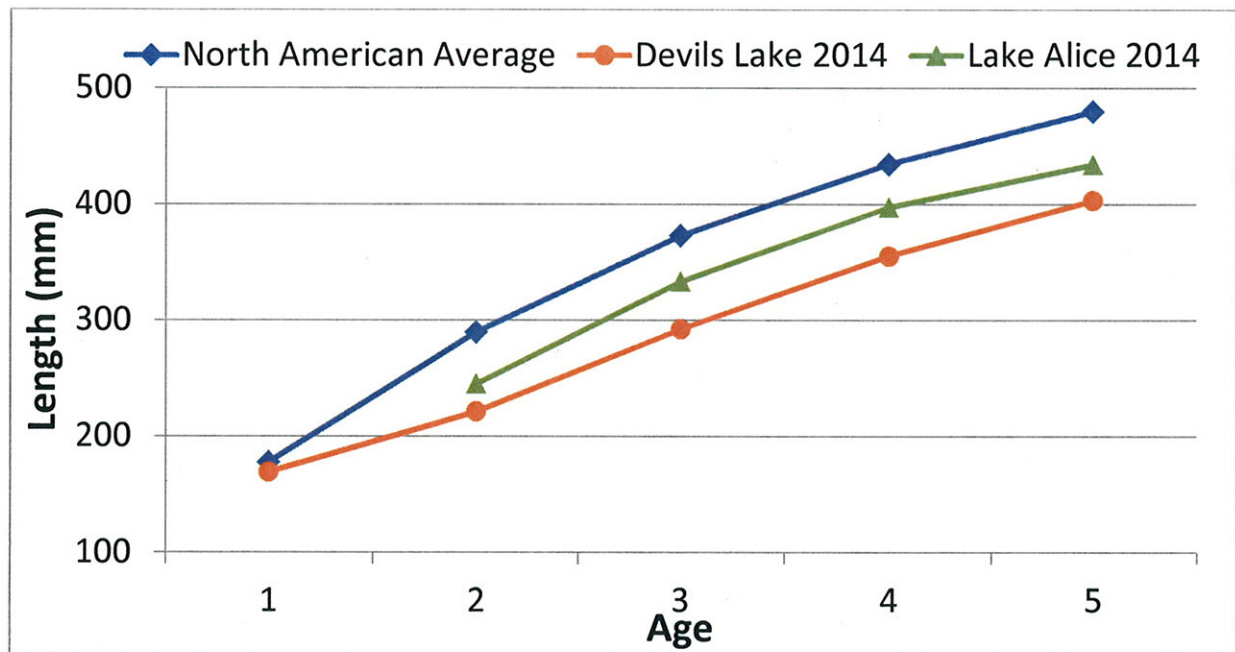


Figure 1. Back-calculated length at age for Lake Alice walleye compared to Devils Lake walleye and the North American average.

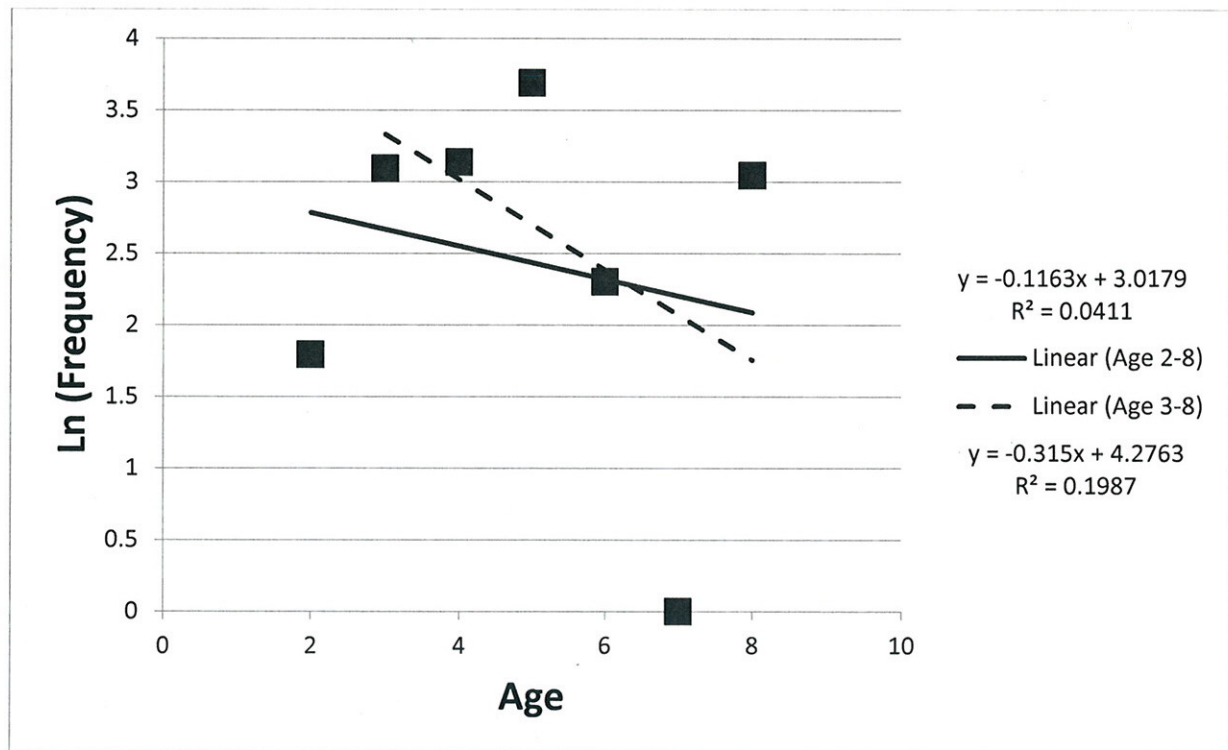


Figure 2. Catch curves for Lake Alice walleye in 2014 (Age 2-8 is shown as a solid line while Age 3-8 is shown as a dashed line).